

ANALYSIS OF VALIDITY OF EMISSION REDUCTIONS AS ERC

AIR PERMITS DIVISION LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

ADDIS PLANT DSM COPOLYMER ADDIS, WEST BATON ROUGE PARISH, LOUISIANA AI NO. 2519 ACTIVITY NO. PER20060001

Background

DSM Copolymer operated a synthetic rubber manufacturing plant located one mile south of Addis in West Baton Rouge Parish, Louisiana. The plant consisted of three units (EP-1, EP-2, and OA-1) and produced both solid and liquid polymers. The plant was shut down in January 2005. At the time of closure, the facility was operating under Permit 3120-00004-V0, issued March 5, 2004, and administratively amended July 30, 2004.

To produce solid polymer, ethylene and propylene plus a third monomer were mixed in a desired ratio and then metered into reactor vessels with a solvent. A catalyst was added and polymerization ensued. The polymer/solvent solution was pumped from reactors to the coagulation section where the majority of unreacted monomers and solvent were removed and recycled. A stripping section removed the remaining monomers and solvent. The crumb rubber was then pumped to the finishing section where it was mechanically dewatered and pressed into bales for shipment. Recycled monomers and solvent were pumped to the recovery section for purification and drying before being returned to the feed blending section.

To produce liquid polymer, ethylene and propylene monomer were mixed in a desired ratio and then metered into reactor vessels with a solvent. A catalyst was added and polymerization ensued. A third monomer may have been added to produce a different liquid polymer. The polymer/solvent solution was pumped from reactors to the flash finishing section. Here the polymer was mixed with hot oil, and unreacted monomers and solvent were separated from the concentrated oil/polymer product. This product was stored in tanks before being shipped by rail car. Monomers and solvent were sent to a recovery section before being returned to the feed blending section.

The majority of the VOC emission reduction is from shutdown of the finishing sections, the storage tanks, and fugitive losses from pumps, valves, and other fittings. Emissions were controlled in accordance with federal and state regulations, primarily 40 CFR 63, Subpart U - NESHAP: Group I Polymers and Resins.

Summary

A portion of the resultant VOC emission decrease is surplus, permanent, quantifiable, and enforceable in accordance with LAC 33:III. Chapter 6-Regulations on Control of Emissions Through the Use of Emission Reduction Credits Banking. Accordingly, these reductions qualify as Emissions Reduction Credits (ERC). Amounts in the following table are given in tons per year (TPY).

Total ERC:

ANALYSIS OF VALIDITY OF EMISSION REDUCTIONS AS ERC

AIR PERMITS DIVISION
LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITYADDIS PLANT
DSM COPOLYMER
ADDIS, WEST BATON ROUGE PARISH, LOUISIANA
AI NO. 2519
ACTIVITY NO. PER20060001

Source (EIQ No.)	Description	Allowable Emissions Before Reduction ¹	Adjusted Allowable Emissions ²	Actual Emissions ³	Allowable Emissions after Reduction	Surplus Emission Reduction
4-78	Hexane Recycle	0	0	0	0	
7-78	Natural Gas K.O. Drain	0.48	0.48	0	0	
8-78	Fresh Hexane Tank	6.09	6.09	2.00	0	2.00
16-78	Wet Wash Solvent Surge	2.28	2.28	1.00	0	1.00
18-78	Tramp Stripper Outfall E.P.1	0.11	0.11	0.11	0	0.11
19-78	Dry Wash Solvent Surge	1.75	1.75	1.75	0	1.75
20-78	Low Pressure Vent	0	0	0	0	
21-80	Toluene Storage Tank	0.19	0.19	0	0	
22-80	Gasoline Storage Tank	0.01	0.01	0	0	
23-81	Catalyst Make-up Tank EP 1A	1.62	1.62	1.62	0	1.62
24-81	Catalyst Make-up Tank EP 1B	1.62	1.62	1.62	0	1.62
25-81	Catalyst Make-up Tank OA 1A	1.62	1.62	1.62	0	1.62
26-81	Catalyst Make-up Tank OA 1B	1.62	1.62	1.00	0	1.00
27-81	Antioxidant Make-up Tank A	0.06	0.06	0	0	
28-81	Promoter Make-up Tank A	0.24	0.24	0	0	
29-81	Neat Catalyst Tank	0.31	0.31	0.31	0	0.31
30-81	Alkyl Blend tank	0	0	0.00	0	
31-81	OA1 Dry Recycle Solvent Tank	0	0	0.00	0	
32-81	Flare Stack	0.61	0.61	0.61	0	0.61
33-81	EN Recovery Jet	1.04	1.04	1.00	0	1.00
34-81	Finishing Line N. #9 Dryer	49.47	49.47	49.00	0	49.00
35-81	Finishing Line S. #8 Dryer	49.47	49.47	49.00	0	49.00
38-82	Finishing Line 3 rd #7 Dryer	49.47	49.47	49.00	0	49.00
39-82	Stripper Shaker Screen OA1	2.37	2.37	2.00	0	2.00
40-82	Alkyl Storage tank	0.13	0.13	0	0	
41-82	Promoter Make-up Tank B	0.86	0.86	0.86	0	0.86
43-82	NVP Storage Tanks (3)	0.04	0.04	0	0	
44-82	Dicumyl Peroxide Storage	0.04	0.04	0	0	
45-83	Boiler No.1	3.00	0 ⁴	0.00	0	
46-83	Boiler No.2	3.00	3.00	2.00	0	2.00
48-86	Tramp Stripper Outfall OA 1	0.11	0.11	0.11	0	0.11
49-88	RD Storage Tank	0.04	0.04	0	0	
50-88	Neat Promoter Storage Tank	0.001	0.001	0	0	
51-88	A.O.Feed Tank EP 2	0.10	0.10	0	0	

¹ Permit No. 3120-0004-V0.² Calculated in accordance with §607 C.3.³ Average of 2001 and 2002 actual emissions (§607 C.2).⁴ Boiler No. 1 claimed in earlier Bank Credit Application.

ANALYSIS OF VALIDITY OF EMISSION REDUCTIONS AS ERC

AIR PERMITS DIVISION LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

ADDIS PLANT DSM COPOLYMER ADDIS, WEST BATON ROUGE PARISH, LOUISIANA AI NO. 2519 ACTIVITY NO. PER20060001

Source (EIQ No.)	Description	Allowable Emissions Before Reduction ¹	Adjusted Allowable Emissions ²	Actual Emissions ³	Allowable Emissions after Reduction	Surplus Emission Reduction
54-88	Promoter make-up Tank EP 2	1.51	1.51	1.00	0	1.00
55-88	Tramp Stripper Outfall EP 2	0.11	0.11	0	0	
57-88	Catalyst Make-up Tank A EP 2	0.77	0.77	0.77	0	0.77
58-88	Catalyst Make-up Tank B EP 2	0.77	0.77	0.77	0	0.77
59-88	Low Pressure Vent EP 2	0	0	0	0	
60-88	Maleic Anhydride Storage Tank	0.04	0.04	0	0	
61-88	Finishing Building Expeller #9	18.12	18.12	10.00	0	10.00
62-88	Finishing Building Expeller #8	18.12	18.12	10.00	0	10.00
63-88	Finishing Building Expeller #7	18.12	18.12	10.00	0	10.00
64-89	Propylene Sphere	0	0	0	0	
68-89	NPPDA Storage Tank	0.04	0.04	0	0	
69-90	Wastewater Transfer Tanks	0.04	0.04	0	0	
70-90	Oil Additives Storage tanks	0.04	0.04	0	0	
71-90	Extender Oil Storage Tanks	0.04	0.04	0	0	
73-90	Finishing Building Expeller #10	35.62	35.62	34.00	0	34.00
74-90	Finishing Line 4 th #10 Dryer	49.41	49.41	47.00	0	47.00
76-99	Third Stage Recovery	0	0	0.00	0	0.00
98	Propylene Tower Fugitives	2.41	2.41	2.00	0	2.00
99	Addis Plant Fugitives	230.83	230.83	184.50	0	184.50
TOTALS		553.74	550.74	464.65	0	464.65
SUMMARY:						
		Baseline emissions (§607.C.4):				464.65 ⁵
		Allowable emissions after reduction (§607.C.5):				0.00
		Surplus emission reduction (§607.C.6):				464.65
		Adjustments for netting (§607.D):				-0.00
		Total ERC:				464.65

Analysis of validity

Timeliness

Per §615.A, all applications for banking emission reductions shall be submitted by March 31 following the year in which the reductions occurred. The Addis Plant was shut down in January 2005. The application was

⁵ Baseline emissions shall be the lower of actual emissions or adjusted allowable emissions when the design value for the nonattainment area is not above the NAAQS for ozone (§607.C.4.a.ii).

ANALYSIS OF VALIDITY OF EMISSION REDUCTIONS AS ERC

AIR PERMITS DIVISION LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

ADDIS PLANT DSM COPOLYMER ADDIS, WEST BATON ROUGE PARISH, LOUISIANA AI NO. 2519 ACTIVITY NO. PER20060001

dated March 30, 2006.⁶

Emissions reductions can be recognized as ERC only if they are determined to be surplus, permanent, quantifiable, and enforceable. Each criterion is addressed below.

Surplus

Procedures for calculating the surplus emission reduction are outlined in §607.C & D.

1. The design value for the nonattainment area is below the 1-hour national ambient air quality standard (NAAQS) for ozone. Per §607.C.4.ii, if the design value for the nonattainment area is not above the 1-hour national ambient air quality standard (NAAQS) for ozone, the department shall compare the actual emissions with the adjusted allowable emissions in order to determine baseline emissions.
2. Calculate actual emissions during the baseline period. Actual emissions during the baseline period of 2001 and 2002 claimed in the Addis Plant ERC Bank application were checked against the department's Emission Inventory database. Adjustments were made as required to determine total actual emissions for the 53 emission points listed in the application as undergoing reduction. See the table in the "Summary" section. VOC emissions during the baseline period were calculated to be 464.65 TPY.
3. Calculate adjusted allowable emissions. Allowable emissions shall be adjusted to account for all new or revised federal or state regulations adopted that will require, or would have required, all or a portion of the emission reductions that comprise the ERC application. At the time of closure, the DSM Copolymer synthetic rubber manufacturing plant was operating under Title V Permit No. 3120-00004-V0 issued March 5, 2004. During the baseline period of 2001-2002 the plant was subject to Permit 3120-00004-03 issued July 10, 1997. Both permits required compliance with the emission control regulations of 40 CFR 63, Subpart U, NESHAP: Group I Polymers and Resins, which had the greatest impact on reducing VOCs emitted by the plant. State regulation §2103 affected some storage tanks and also had an impact in reducing VOCs, but to a lesser extent than Subpart U. The department examined amendments to both the applicable federal and state regulations to determine if any of the emission points in the ERC application would have had to undergo further reduction and no new or modified control requirements were found. Therefore, the emission limits contained in the Title V permit in force at the time of plant closure also represented the "adjusted allowable emissions" as defined by §607.C.3. See the table in the "Summary" section. Adjusted allowable emissions total 550.741 TPY.
4. Quantify baseline emissions. Per §607.C.4.a.ii, if the design value is not above the NAAQS for ozone, baseline emissions shall be the lower of actual emissions (step 2 above) or adjusted allowable emissions determined in accordance with §607.C.3 (step 3 above). In this case, actual emissions are the limiting factors. Baseline emissions total 464.65 TPY.
5. Calculate allowable emissions after the reductions occurred. The plant was permanently shut down; thus, allowable emissions are zero.

⁶ See EDMS Document No. 34135205 (pg. 2 of 120).

ANALYSIS OF VALIDITY OF EMISSION REDUCTIONS AS ERC

AIR PERMITS DIVISION LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

ADDIS PLANT DSM COPOLYMER ADDIS, WEST BATON ROUGE PARISH, LOUISIANA AI NO. 2519 ACTIVITY NO. PER20060001

6. Calculate the surplus emission reduction by subtracting the allowable emissions after the reduction occurred from the baseline emissions.

$$464.65 \text{ TPY} - 0.00 \text{ TPY} = 464.65 \text{ TPY}$$

7. Finally, adjust for netting (§607.D). Emission reductions used in a netting analysis (i.e., to determine the *net emissions increase* as defined in LAC 33:III.504 or 509, as appropriate) that prevented the increase from being considered "significant" are not eligible for use as offsets. The quantity of emission reductions utilized to "net out" shall not be considered creditable. There is zero adjustment for netting, as the emission reductions were not used in a netting analysis.

$$464.65 \text{ TPY} - 0.00 \text{ TPY} = 464.65 \text{ TPY}$$

Permanent

The reductions are permanent because the plant was shut down in January 2005, the facility was demolished shortly thereafter, and the air emissions permit was terminated on October 10, 2006.

Quantifiable

The emissions from the plant were calculated using approved EPA methods, EPA emission factors, process data, and production data.

Enforceable

Finally, the reductions are enforceable because the emission sources were permanently removed from the site and Permit No. 3120-00004-V0 was terminated by the department.